



Small Business Innovations

A steadily growing source of aerospace spinoff applications is the Small Business Innovation Research (SBIR) program, which was established by the Congress in 1982 with dual objectives: to increase participation by small businesses in federal R&D activities, and to stimulate conversion of government-funded research into commercial applications.

NASA is one of 11 major technology-generating agencies of the federal government participating, each administering its own program independently under policy guidelines set by the Small Business Administration. In the decade-plus since the program's inception, NASA has awarded SBIR contracts to more than 800 companies and commercial

spinoffs have resulted from about one of every three projects completed.

Among recent examples of successful commercialization in the field of computer technology is the introduction of an advanced family of software products developed by Symbiotics, Inc., Cambridge, Massachusetts under SBIR grants from NASA and the U.S. Army.

Under the Army grant, Symbiotics developed a cornerstone software system that permits users to upgrade their products from standalone, isolated applications so that they can communicate and participate in a distributed computing environment. NASA's Kennedy Space Center (KSC) is applying the software to its continuing problem of

integrating new technology with existing systems — for example, integrating newly-developed artificial intelligence systems into the computer complex of the Space Shuttle launch processing system, which has equipment that in some cases is more than 20 years old.

Under a subsequent NASA SBIR grant, Symbiotics extended the original technology to include additional tools, grouped under the product name SOCIAL, that enable NASA to integrate and coordinate the intelligent and conventional systems used to plan and schedule Shuttle launch support operations. SOCIAL provides an object-oriented distributed processing environment that lets users pass

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data among applications in a network of computers with different processors, architectures and operating systems — even when the applications are written in different programming languages. In the photo at left, the array of computer systems illustrates the ability of Symbiotics' program Networks to network various platforms.

At left is the company's vice president-marketing, Duncan MacKay, talking with Richard Adler (center), vice president of advanced development.

Symbiotics introduced SOCIAL as a commercial product in 1993. "SOCIAL has applicability in a broad variety of government and commercial domains," says Dr. Richard Adler, Symbiotics' director of advanced development. "For example, manufacturing process control closely resembles KSC's operations support for the Space Shuttle fleet: a computer network is used to monitor and control equipment, such as the equipment for producing chemicals, semiconductors or mechanical parts. Other parallels include operation support for complex communications, computer, power generation/distribution and transportation networks. In the business sector, SOCIAL can be used to integrate networks of financial workstations, their resident databases, analysis and graphic display tools."

Another SBIR program that spawned a commercial product involves the work of Software Productivity Solutions, Inc. (SPS), Indialantic, Florida in

developing tools for software reuse, an emerging technology that can, says SPS, "produce software of significantly higher quality at a lower cost and in less time."

SPS conducted separate SBIR projects for Langley Research Center and the Army, developing systems for reusing existing software rather than creating new computer programs from scratch. The technologies from both projects were combined in SPS' commercially available Information Library System known as InQuisiX™.

InQuisiX is a reuse library providing high performance classification (*above*), cataloging, searching, browsing, retrieval and synthesis capabilities that form the foundation for comprehensive automation

reuse. With InQuisiX, says company literature, "software assets once thought to be obsolete can be identified for use in new applications."

InQuisiX provides a technological base for SPS' plan to develop a broad line of products for the commercial market. SPS has formed a business alliance with Science Applications International Corporation (SAIC), San Diego, California for marketing software reuse products and services. SPS will be responsible primarily for development and commercialization of advanced software. SAIC will focus on providing analysis and consulting services. ●

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